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NEWS	7	DEC 22	Value-Added Indexing Improves Access to World Traditional Medicine Patents in Cplus
NEWS	8	JAN 24	The new and enhanced DPCI file on STN has been released
NEWS	9	JAN 26	Improved Timeliness of CAS Indexing Adds Value to USPATFULL and USPAT2 Chemistry Patents
NEWS	10	JAN 26	Updated MeSH vocabulary, new structured abstracts, and other enhancements improve searching in STN reload of MEDLINE
NEWS	11	JAN 28	CABA will be updated weekly
NEWS	12	FEB 23	PCTFULL file on STN completely reloaded
NEWS	13	FEB 23	STN AnaVist Test Projects Now Available for Qualified Customers
NEWS	14	FEB 25	LPCI will be replaced by LDPCI
NEWS	15	MAR 07	Pricing for SELECTing Patent, Application, and Priority Numbers in the USPAT and IFI Database Families is Now Consistent with Similar Patent Databases on STN
NEWS	16	APR 26	Expanded Swedish Patent Application Coverage in CA/Cplus Provides More Current and Complete Information
NEWS	17	APR 28	The DWPI (files WPINDEX, WPIDS and WPIX) on STN have been enhanced with thesauri for the European Patent Classifications
NEWS	18	MAY 02	MEDLINE Improvements Provide Fast and Simple Access to DOI and Chemical Name Information
NEWS	19	MAY 12	European Patent Classification thesauri added to the INPADOC files, PCTFULL, GBFULL and FRFULL
NEWS	20	MAY 23	Enhanced performance of STN biosequence searches
NEWS	21	MAY 23	Free Trial of the Numeric Property Search Feature in PCTFULL on STN
NEWS	22	JUN 20	STN on the Web Enhanced with New Patent Family Assistant and Updated Structure Plug-In
NEWS	23	JUN 20	INPADOC databases enhanced with first page images
NEWS	24	JUN 20	PATDPA database updates to end in June 2011
NEWS	25	JUN 21	INPADOC: Delay of German patent coverage
NEWS	26	JUN 26	MARPAT Enhancements Save Time and Increase Usability
NEWS	27	JUL 25	STN adds Australian patent full-text database, AUPATFULL, including the new numeric search feature.
NEWS	28	AUG 01	CA Sections Added to ACS Publications Web Editions Platform

NEWS EXPRESS 17 DECEMBER 2010 CURRENT WINDOWS VERSION IS V8.4.2 .1,  
AND CURRENT DISCOVER FILE IS DATED 24 JANUARY 2011.

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=> file caplus

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FULL ESTIMATED COST	0.23	0.23

FILE 'CAPLUS' ENTERED AT 19:33:19 ON 04 AUG 2011

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FILE COVERS 1907 - 4 Aug 2011 VOL 155 ISS 6

FILE LAST UPDATED: 3 Aug 2011 (20110803/ED)

REVISED CLASS FIELDS (/NCL) LAST RELOADED: Jun 2011

USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Jun 2011

CAplus now includes complete International Patent Classification (IPC)  
reclassification data for the first quarter of 2011.

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This file contains CAS Registry Numbers for easy and accurate  
substance identification.

=> s loline

133 LOLINE

33 LOLINES

L1 140 LOLINE

(LOLINE OR LOLINES)

```
=> s l1 and bacteria
      421341 BACTERIA
      191 BACTERIAS
      421442 BACTERIA
          (BACTERIA OR BACTERIAS)
L2      1 L1 AND BACTERIA
```

=> d l2 ibib ab

```
L2  ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER:      2011:770722  CAPLUS
TITLE:                 An efficient synthesis of loline alkaloids
AUTHOR(S):             Cakmak, Mesut; Mayer, Peter; Trauner, Dirk
CORPORATE SOURCE:      Department of Chemistry and Pharmacology and Center
                        for Integrated Protein Science,
                        Ludwig-Maximilians-Universitaet, Munich, 81377,
                        Germany
SOURCE:                Nature Chemistry (2011), 3(7), 543-545
                        CODEN: NCAHBB; ISSN: 1755-4330
PUBLISHER:             Nature Publishing Group
DOCUMENT TYPE:         Journal; (online computer file)
LANGUAGE:              English
AB  Loline (1) is a small alkaloid that, in spite of its simple-looking
      structure, has posed surprising challenges to synthetic chemists. It has
      been known for more than a century and has been the subject of extensive
      biol. investigations, but only two total syntheses have been achieved to
      date. Here, we report an asym. total synthesis of loline that, with
      less than ten steps, is remarkably short. Our synthesis incorporates a
      Sharpless epoxidn., a Grubbs olefin metathesis and an unprecedented
      transannular aminobromination, which converts an eight-membered cyclic
      carbamate into a bromopyrrolizidine. The synthesis is marked by a high
      degree of chemo- and stereoselectivity and gives access to several members
      of the loline alkaloid family. It delivers sufficient material to
      support a program aimed at studying the complex interactions between
      plants, fungi, insects and bacteria brokered by loline alkaloids.
REFERENCE COUNT:       27  THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS
                        RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
```

```
=> s l1 and (antiinfective or antibacterial)
      1920 ANTIINFECTIVE
      145 ANTIINFECTIVES
      2017 ANTIINFECTIVE
          (ANTIINFECTIVE OR ANTIINFECTIVES)
      145234 ANTIBACTERIAL
      4350 ANTIBACTERIALS
      146518 ANTIBACTERIAL
          (ANTIBACTERIAL OR ANTIBACTERIALS)
L3      2 L1 AND (ANTIINFECTIVE OR ANTIBACTERIAL)
```

=> d l3 1-2 ibib ab

```
L3  ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER:      2008:918265  CAPLUS
DOCUMENT NUMBER:       149:439128
TITLE:                 Endophytes: exploiting biodiversity for the
                        improvement of natural product-based drug discovery
AUTHOR(S):             Staniek, Agata; Woerdenbag, Herman J.; Kayser, Oliver
CORPORATE SOURCE:      Pharmaceutical Biology Department, University of
```

SOURCE: Groningen, Neth.  
Journal of Plant Interactions (2008), 3(2), 75-93  
CODEN: JPPIOAG; ISSN: 1742-9145  
PUBLISHER: Taylor & Francis Ltd.  
DOCUMENT TYPE: Journal; General Review  
LANGUAGE: English

AB A review. Endophytes, microorganisms that colonize internal tissues of all plant species, create a huge biodiversity with yet unknown novel natural products, presumed to push forward the frontiers of drug discovery. Next to the clin. acknowledged antineoplastic agent, paclitaxel, endophyte research has yielded potential drug lead compds. with antibacterial, antiviral, antioxidant, insulin mimetic, anti-neurodegenerative and immunosuppressant properties. Furthermore, while being implicated in livestock neurotoxicosis, some endophyte-produced alkaloids have been shown to display insecticidal activity. The endophyte-host relationship is postulated to be a 'balanced antagonism'. Moreover, the plausibility of horizontal gene transfer (HGT) hypothesis is taken into account. Knowledge of the genetic background of endophytic natural product biosynthesis is discussed on the basis of loline alkaloids, ergopeptines, lolitrems and maytansinoids. The current dynamic progress in genomics will contribute to a better understanding of endophytic microbes and to further exploiting them as a source of pharmaceutically relevant compds.

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)

REFERENCE COUNT: 170 THERE ARE 170 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2005:451185 CAPLUS

DOCUMENT NUMBER: 142:487686

TITLE: Antibacterial compositions comprising (alkyl)aminopyrrolizidine compounds

INVENTOR(S): Nash, Robert James; Wolferstan, Paul; Fleet, George William John; Van Ameijde, Jeroen; Horne, Graeme

PATENT ASSIGNEE(S): Molecularnature Limited, UK; M N L Pharma Limited

SOURCE: PCT Int. Appl., 24 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005046674	A2	20050526	WO 2004-GB4624	20041103
WO 2005046674	A3	20050714		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRIORITY APPLN. INFO.: GB 2003-25655 A 20031104

OTHER SOURCE(S): MARPAT 142:487686

AB Antibacterial (alkyl)aminopyrrolizidine compds. for use in therapy or prophylaxis may be pharmaceutically acceptable derivs. of loline. Examples include 2,7-dihydroxy-1-methylaminopyrrolizidine, 2,7-dihydroxy-1-aminopyrrolizidine, 2-hydroxy-1-aminopyrrolizidine, 2-hydroxy-1-methylaminopyrrolizidine, 7-hydroxy-1-aminopyrrolizidine, 7-hydroxy-1-methylaminopyrrolizidine, 1 $\alpha$ -methylamino-2 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -methylamino-7 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -amino-2 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -amino-7 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -amino-2,7 $\beta$ -hydroxypyrrolizidine and 1 $\alpha$ -methylamino-2,7 $\beta$ -hydroxypyrrolizidine. The compds. may be used to treat infection with Staphylococcus aureus (MRSA), including C-MSRA1, C-MRSA2, C-MRSA3, C-MSRA4, Belgian MRSA, Swiss MRSA and any of the EMRSA strains. For example, meadow brown butterflies have activity against Staphylococcus aureus (MRSA) and a 50% ethanol extract of these butterflies contains the activity. Furthermore, the activity was retained by a strongly acidic cation exchange resin. The material not bound to the resin was inactive but the material displaced by 2 M ammonia solution had activity. This ammonia fraction contained various open-furan ring lolines (as determined by mass spectroscopy). Also, a semisynthetic reaction mixture derived from loline was tested for activity by incubation for 12 to 24 h at 37° at various concns. with a suspension of 1x10<sup>3</sup> c.f.u. of Staphylococcus aureus. After incubation, test samples were plated onto solid agar plates and colonies counted after incubation at 37° for 24 h. Complete bacterial killing was observed

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> s aminopyrrolizidine  
 10 AMINOPYRROLIZIDINE  
 9 AMINOPYRROLIZIDINES  
 L4 17 AMINOPYRROLIZIDINE  
 (AMINOPYRROLIZIDINE OR AMINOPYRROLIZIDINES)

=> d 14 1-17 ibib ab

L4 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2009:905355 CAPLUS

DOCUMENT NUMBER: 151:381149

TITLE: Synthesis of polyhydroxylated 7-aminopyrrolizidines and 8-aminoindolizidines

AUTHOR(S): Stecko, Sebastian; Jurczak, Margarita; Staszewska-Krajewska, Olga; Solecka, Jolanta; Chmielewski, Marek

CORPORATE SOURCE: Institute of Organic Chemistry, Polish Academy of Sciences, Warsaw, 01-224, Pol.

SOURCE: Tetrahedron (2009), 65(34), 7056-7063  
 CODEN: TETRAB; ISSN: 0040-4020

PUBLISHER: Elsevier Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 151:381149

AB The ammonolysis of a lactone moiety in tricyclic cycloadducts derived from non-racemic five-membered cyclic nitrone and 2(5H)-furanones furnishes an amido function, which after subsequent Hofmann rearrangement, leads to a protected amino group attached to the bicyclic isoxazolidine skeleton. A successive simple transformation, involving cleavage of N-O bond followed

by intramol. N-alkylation, provides an access to the polyhydroxylated 7-aminopyrrolizidines and 8-aminoindolizidines, i.e. I, potential glycosidases inhibitors.

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)  
REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2008:1065320 CAPLUS  
DOCUMENT NUMBER: 151:96719  
TITLE: Role of the LolP cytochrome P450 monooxygenase in loline alkaloid biosynthesis  
AUTHOR(S): Spiering, Martin J.; Faulkner, Jerome R.; Zhang, Dong-Xiu; Machado, Caroline; Grossman, Robert B.; Schardl, Christopher L.  
CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky, Lexington, KY, 40546-0312, USA  
SOURCE: Fungal Genetics and Biology (2008), 45(9), 1307-1314  
CODEN: FGBIFV; ISSN: 1087-1845  
PUBLISHER: Elsevier Inc.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The insecticidal loline alkaloids, produced by *Neotyphodium uncinatum* and related endophytes, are exo-1-aminopyrrolizidines with an ether bridge between C-2 and C-7. Loline alkaloids vary in Me, acetyl, and formyl substituents on the 1-amine, which affect their biol. activity. Enzymes for key loline biosynthesis steps are probably encoded by genes in the LOL cluster, which is duplicated in *N. uncinatum*, except for a large deletion in lolP2. The role of lolP1 was investigated by its replacement with a hygromycin B phosphotransferase gene. Compared to wild type *N. uncinatum* and an ectopic transformant,  $\Delta$ lolP1 cultures had greatly elevated levels of N-methyllooline (NML) and lacked N-formyllooline (NFL). Complementation of  $\Delta$ lolP1 with lolP1 under control of the *Emericella nidulans* trpC promoter restored NFL production. These results and the inferred sequence of LolP1 indicate that it is a cytochrome P 450, catalyzing oxygenation of an N-Me group in NML to the N-formyl group in NFL.

OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)  
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2007:539557 CAPLUS  
TITLE: Intermediate steps of loline alkaloid biosynthesis  
AUTHOR(S): Faulkner, Jerome R.; Hussaini, Syed R.; Blankenship, Jimmy D.; Spiering, Martin J.; Pal, Sitaram; Grossman, Robert B.; Schardl, Christopher L.  
CORPORATE SOURCE: Plant Pathology, University of Kentucky, Lexington, KY, 40546-0312, USA  
SOURCE: Abstracts, 39th Central Regional Meeting of the American Chemical Society, Covington, KY, United States, May 20-23 (2007), CRM-063. American Chemical Society: Washington, D. C.  
CODEN: 69JFCV  
DOCUMENT TYPE: Conference; Meeting Abstract  
LANGUAGE: English

AB *Epichloe* species and their anamorphs, *Neotyphodium* species, are fungal endophytes that inhabit cool-season grasses and often produce bioprotective alkaloids. These alkaloids include lolines, which are insecticidal and insect feeding deterrents. Loline are

1-aminopyrrolizidines with a substituted amino group on carbon 1 and an oxygen bridge between carbons 2 and 7. In our previously published studies we showed that lolines are derived from the amino acids L-proline and L-homoserine, and we also characterized the gene cluster required for loline alkaloid production. Eight synthesized deuterated compds. and deuterated proline were fed to *Neotyphodium uncinatum* in loline-producing cultures to test their possible roles as precursors or intermediates in the loline pathway. N-Formylloline was extracted from the cultures and assayed by GCMS for incorporation of the deuterium label. Using this approach we determined that N-(3-amino-3-carboxypropyl)proline and exo-1-aminopyrrolizidine are intermediates in loline alkaloid biosynthesis. A gene replacement strategy was also employed to eliminate one of the genes in the loline alkaloid cluster. The resulting fungal transformant was altered in its loline alkaloid production phenotype. The combined feeding results and gene replacement experiment were used to propose a likely sequence of bond formation in loline alkaloid biosynthesis. The first step is condensation of proline with homoserine by an unusual gamma-substitution reaction, and in the later steps an ether bridge is introduced in a chemical unusual context, after which N-methyllooline is converted to N-formylloline.

L4 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:698366 CAPLUS

DOCUMENT NUMBER: 146:180445

TITLE: On the sequence of bond formation in loline alkaloid biosynthesis

AUTHOR(S): Faulkner, Jerome R.; Hussaini, Syed R.; Blankenship, Jimmy D.; Pal, Sitaram; Branan, Bruce M.; Grossman, Robert B.; Schardl, Christopher L.

CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky, Lexington, KY, 40546-0312, USA

SOURCE: ChemBioChem (2006), 7(7), 1078-1088

CODEN: CBCHFX; ISSN: 1439-4227

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 146:180445

AB Loline alkaloids are saturated pyrrolizidines with an oxygen bridge between carbon atoms C-2 and C-7 and an amino group on C-1. They are bioprotective alkaloids produced by *Epichloe* and *Neotyphodium* species, mutualistic fungal endophytes that are symbiotic with cool-season grasses. The sequence of bond formation in loline alkaloid biosynthesis was determined by synthesizing deuterated forms of potential intermediates and feeding them to cultures of the endophyte *Neotyphodium uncinatum*. These cultures incorporated deuterium from labeled N-(3-amino-3-carboxypropyl)proline and exo-1-aminopyrrolizidine into N-formylloline. The first result suggests that N-(3-amino-3-carboxypropyl)proline is the first committed intermediate in loline biosynthesis, and the second result demonstrates that the pyrrolizidine rings form before the ether bridge. The incorporation of these two compds. into lolines and the lack of incorporation of several related compds. clarify the order of bond formation in loline alkaloid biosynthesis.

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 5 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2005:540971 CAPLUS

DOCUMENT NUMBER: 143:302170

TITLE: Biosynthetic precursors of fungal pyrrolizidines, the  
loline alkaloids

AUTHOR(S): Blankenship, Jimmy D.; Houseknecht, Justin B.; Pal,  
Sitaram; Bush, Lowell P.; Grossman, Robert B.;  
Schardl, Christopher L.

CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky,  
Lexington, KY, 40546-0312, USA

SOURCE: ChemBioChem (2005), 6(6), 1016-1022  
CODEN: CBCHFX; ISSN: 1439-4227

PUBLISHER: Wiley-VCH Verlag GmbH  
& Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Loline alkaloids are saturated pyrrolizidines with a substituted 1-amino group  
and an oxygen bridge between C2 and C7, and are insecticidal metabolites  
of plant-symbiotic fungi (endophytes). Cultures of the endophyte,  
Neotyphodium uncinatum, incorporated labeled L-proline and L-homoserine  
into the 1-aminopyrrolizidine, N-formylloline. The A-ring carbons C1-C3  
and the N1 were derived from L-homoserine; the B-ring carbons C5-C8 and  
the ring nitrogen were derived from L-proline. Incorporation of both  
deuterium atoms from L-[4,4-2H2]homoserine and feeding tests with labeled  
L-methionine indicated that L-homoserine incorporation was not achieved  
via aspartyl semialdehyde or S-adenosylmethionine, but probably involved a  
highly novel N-C bond-forming  $\gamma$ -substitution reaction.

OS.CITING REF COUNT: 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS  
RECORD (10 CITINGS)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2005:451185 CAPLUS

DOCUMENT NUMBER: 142:487686

TITLE: Antibacterial compositions comprising  
(alkyl)aminopyrrolizidine compounds

INVENTOR(S): Nash, Robert James; Wolferstan, Paul; Fleet, George  
William John; Van Ameijde, Jeroen; Horne, Graeme

PATENT ASSIGNEE(S): Molecularnature Limited, UK; M N L Pharma Limited

SOURCE: PCT Int. Appl., 24 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005046674	A2	20050526	WO 2004-GB4624	20041103
WO 2005046674	A3	20050714		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRIORITY APPLN. INFO.: GB 2003-25655 A 20031104

OTHER SOURCE(S): MARPAT 142:487686



AB Antibacterial (alkyl)aminopyrrolizidine compds. for use in therapy or prophylaxis may be pharmaceutically acceptable derivs. of loline. Examples include 2,7-dihydroxy-1-methylaminopyrrolizidine, 2,7-dihydroxy-1-aminopyrrolizidine, 2-hydroxy-1-aminopyrrolizidine, 2-hydroxy-1-methylaminopyrrolizidine, 7-hydroxy-1-aminopyrrolizidine, 7-hydroxy-1-methylaminopyrrolizidine, 1 $\alpha$ -methylamino-2 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -methylamino-7 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -amino-2 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -amino-7 $\beta$ -hydroxypyrrolizidine, 1 $\alpha$ -amino-2,7 $\beta$ -hydroxypyrrolizidine and 1 $\alpha$ -methylamino-2,7 $\beta$ -hydroxypyrrolizidine. The compds. may be used to treat infection with *Staphylococcus aureus* (MRSA), including C-MRSA1, C-MRSA2, C-MRSA3, C-MRSA4, Belgian MRSA, Swiss MRSA and any of the EMRSA strains. For example, meadow brown butterflies have activity against *Staphylococcus aureus* (MRSA) and a 50% ethanol extract of these butterflies contains the activity. Furthermore, the activity was retained by a strongly acidic cation exchange resin. The material not bound to the resin was inactive but the material displaced by 2 M ammonia solution had activity. This ammonia fraction contained various open-furan ring lolines (as determined by mass spectroscopy). Also, a semisynthetic reaction mixture derived from loline was tested for activity by incubation for 12 to 24 h at 37° at various concns. with a suspension of 1x10<sup>3</sup> c.f.u. of *Staphylococcus aureus*. After incubation, test samples were plated onto solid agar plates and colonies counted after incubation at 37° for 24 h. Complete bacterial killing was observed

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)  
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2005:137050 CAPLUS

DOCUMENT NUMBER: 142:355438

TITLE: A flexible carbanionic approach to protected trans-(2R,3S)-2-substituted 3-aminopyrrolidines: application to the asymmetric synthesis of (+)-absouline

AUTHOR(S): Tang, Tian; Ruan, Yuan-Ping; Ye, Jian-Liang; Huang, Pei-Qiang

CORPORATE SOURCE: Department of Chemistry and The Key Laboratory for Chemical Biology of Fujian Province, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, 361005, Peop. Rep. China

SOURCE: Synlett (2005), (2), 231-234  
CODEN: SYNLES; ISSN: 0936-5214

PUBLISHER: Georg Thieme Verlag

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 142:355438

AB Based on the use of Ph thioether I as a synthetic equivalent, a new carbanionic approach to trans-(2R,3S)-2-substituted 3-aminopyrrolidines, e.g. II, is described. Application of the method to the asym. synthesis of 1-aminopyrrolizidine alkaloid (+)-absouline (III) is also reported.

OS.CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS RECORD (12 CITINGS)  
REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:742196 CAPLUS

DOCUMENT NUMBER: 141:379761  
 TITLE: Reactivity of Chiral  $\alpha$ -Amidoalkyl phenyl  
 Sulfones with Stabilized Carbanions. Stereoselective  
 Synthesis of Optically Active 1-Aminopyrrolizidine  
 AUTHOR(S): Giri, Nicola; Petrini, Marino; Profeta, Roberto  
 CORPORATE SOURCE: Dipartimento di Scienze Chimiche, Universita di  
 Camerino, Camerino, I-62032, Italy  
 SOURCE: Journal of Organic Chemistry (2004), 69(21), 7303-7308  
 CODEN: JOCEAH; ISSN: 0022-3263  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 141:379761

AB Metal enolates and functionalized allylzinc reagents react with optically active  $\alpha$ -amidoalkyl Ph sulfones to give N-carbamoylamino derivs. with variable levels of anti diastereoselectivity. Zinc enolates provide comparable results with respect to lithium enolates in terms of diastereoselectivity but afford  $\beta$ -amino ester derivs. in lower yield. The synthetic utility of the obtained chiral N-carbamoylamino esters is demonstrated by the first enantioselective synthesis of (-)-1-aminopyrrolizidine (I) a central intermediate for the preparation of various biol. active substances.

OS.CITING REF COUNT: 24 THERE ARE 24 CAPLUS RECORDS THAT CITE THIS RECORD (24 CITINGS)

REFERENCE COUNT: 63 THERE ARE 63 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:569908 CAPLUS  
 DOCUMENT NUMBER: 141:101190  
 TITLE: Cloning and sequences for gene clusters associated with biosynthesis of insecticidal loline alkaloids in the fungal endophyte Neotyphodium uncinatum, and uses in alkaloid production  
 INVENTOR(S): Schardl, Christopher L.; Wilkinson, Heather H.; Spiering, Martin J.  
 PATENT ASSIGNEE(S): University of Kentucky Research Foundation, USA  
 SOURCE: U.S. Pat. Appl. Publ., 46 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040139496	A1	20040715	US 2003-601700	20030624
US 7183098	B2	20070227		

PRIORITY APPLN. INFO.: US 2002-390446P P 20020624

AB Loline alkaloids (LA), which are 1-aminopyrrolizidines with an oxygen bridge, are produced by Epichloee (anamorph = Neotyphodium) species, endophytes of grasses. LA are insecticidal, thus helping protect host plants from insect herbivory. Suppression subtractive hybridization PCR was used to isolate transcripts up-regulated during loline alkaloid production in cultures of Neotyphodium uncinatum. Subtracted cDNAs were cloned, and a  $\lambda$ -phage cDNA library from an LA-expressing N. uncinatum culture was screened with subtracted cDNA. In BLAST searches, several cDNAs identified had sequence similarities to aspartate kinases, and another with O-acetylhomoserine-(thiol)lyase. Differential expression of these two genes in LA-producing cultures of N. uncinatum was confirmed, and in a survey of 23 isolates from 21 Neotyphodium and Epichloee species these two

genes strictly correlated with LA production Two nucleic acid mols. encoding two loline alkaloid gene clusters have been identified.

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:556216 CAPLUS

DOCUMENT NUMBER: 138:84162

TITLE: Expressed sequence tags and genes associated with loline alkaloid expression by the fungal endophyte *Neotyphodium uncinatum*

AUTHOR(S): Spiering, Martin J.; Wilkinson, Heather H.; Blankenship, Jimmy D.; Schardl, Christopher L.

CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky, Lexington, KY, 40546-0091, USA

SOURCE: Fungal Genetics and Biology (2002), 36(3), 242-254  
CODEN: FGBIFV; ISSN: 1087-1845

PUBLISHER: Elsevier Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Loline alkaloids (LA), which are 1-aminopyrrolizidines with an oxygen bridge, are produced by *Epichloe* (anamorph=*Neotyphodium*) species, endophytes of grasses. LA are insecticidal, thus, helping to protect host plants from insect herbivore. The objective of this study was to identify genes associated with LA biosynthesis. Suppression subtractive hybridization PCR was used to isolate transcripts up-regulated during LA production in cultures of *Neotyphodium uncinatum*. Subtracted cDNAs were cloned and a  $\lambda$ -phage cDNA library from an LA-expressing *N. uncinatum* culture was screened with subtracted cDNA. In BLAST searches, several cDNAs identified had sequence similarities to aspartate kinases and another with O-acetylhomoserine-(thiol)lyase. Differential expression of these two genes in LA-producing cultures of *N. uncinatum* was confirmed and in a survey of 23 isolates from 21 *Neotyphodium* and *Epichloe* species these two genes strictly correlated with LA production These findings open up the possibility for detailed studies on genes and enzymes involved in LA production

OS.CITING REF COUNT: 21 THERE ARE 21 CAPLUS RECORDS THAT CITE THIS RECORD (21 CITINGS)

REFERENCE COUNT: 60 THERE ARE 60 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2001:667414 CAPLUS

DOCUMENT NUMBER: 136:2642

TITLE: Production of loline alkaloids by the grass endophyte, *Neotyphodium uncinatum*, in defined media

AUTHOR(S): Blankenship, J. D.; Spiering, M. J.; Wilkinson, H. H.; Fannin, F. F.; Bush, L. P.; Schardl, C. L.

CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky, Lexington, KY, 40546-0091, USA

SOURCE: Phytochemistry (2001), 58(3), 395-401  
CODEN: PYTCAS; ISSN: 0031-9422

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Lolinales (saturated 1-aminopyrrolizidines with an oxygen bridge) are insecticidal alkaloids produced in symbioses of certain *Epichloe* (anamorph=*Neotyphodium*) species (fungal endophytes) with grasses, particularly of the genera *Lolium* and *Festuca*. Prior to the present

study, it was unknown whether lolines were of plant or fungal origin. *Neotyphodium uncinatum*, the common endophyte of meadow fescue (*Lolium pratense*=*Festuca pratensis*) produced loline, N-acetylnorloline, and N-formylloline when grown in the defined minimal media at pH 5.0-7.5, with both organic and inorg. nitrogen sources and sugars as carbon sources. In contrast, lolines were not detected in complex medium cultures. GC-MS and <sup>13</sup>C NMR spectroscopic analyses confirmed the identity of the alkaloids isolated from the defined medium cultures. Lolines accumulated to ca. 700 mg/l (4 mM) in cultures with 16.7 mM sucrose and 15-30 mM asparagine, ornithine or urea. Kinetics of loline production and fungal growth were assessed in defined medium with 16.7 mM sucrose and 30 mM ornithine. The alkaloid production rate peaked after the onset of stationary phase, as is common for secondary metabolism in other microbes.

OS.CITING REF COUNT: 34 THERE ARE 34 CAPLUS RECORDS THAT CITE THIS RECORD (34 CITINGS)  
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2000:702799 CAPLUS

DOCUMENT NUMBER: 133:360903

TITLE: Contribution of fungal loline alkaloids to protection from aphids in a grass-endophyte mutualism

AUTHOR(S): Wilkinson, Heather H.; Siegel, Malcolm R.; Blankenship, Jimmy D.; Mallory, Allison C.; Bush, Lowell P.; Schardl, Christopher L.

CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky, Lexington, 40546-0091, USA

SOURCE: Molecular Plant-Microbe Interactions (2000), 13(10), 1027-1033

CODEN: MPMIEL; ISSN: 0894-0282

PUBLISHER: APS Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Fungal endophytes provide grasses with enhanced protection from herbivory, drought, and pathogens. The loline alkaloids (saturated 1-aminopyrrolizidines with an oxygen bridge) are fungal metabolites often present in grasses with fungal endophytes of the genera *Epichloe* or *Neotyphodium*. Mendelian genetic anal. was conducted to test for activity of lolines produced in plants against aphids feeding on those plants. Though most loline-producing endophytes are asexual, it was found that a recently described sexual endophyte, *Epichloe festucae*, had heritable variation for loline alkaloid expression (Lol+) or nonexpression (Lol-). By analyzing segregation of these phenotypes and of linked DNA polymorphisms in crosses, we identified a single genetic locus controlling loline alkaloid expression in those *E. festucae* parents. We then tested segregating Lol+ and Lol- full-sibling fungal progeny for their ability to protect host plants from two aphid species, and observed that alkaloid expression cosegregated with activity against these insects. The in planta loline alkaloid levels correlated with levels of anti-aphid activity. These results suggested a key role of the loline alkaloids in protection of host plants from certain aphids, and represent, to our knowledge, the first Mendelian anal. demonstrating how a fungal factor contributes protection to plant-fungus mutualism.

OS.CITING REF COUNT: 50 THERE ARE 50 CAPLUS RECORDS THAT CITE THIS RECORD (51 CITINGS)  
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1999:512191 CAPLUS

DOCUMENT NUMBER: 131:297587  
TITLE: Phytochemistry and chemotaxonomy of the  
convolvulaceae. Part 8. Occurrence of loline alkaloids  
in *Argyrea mollis* (Convolvulaceae)  
AUTHOR(S): Tofern, Britta; Kaloga, Macki; Witte, Ludger;  
Hartmann, Thomas; Eich, Eckart  
CORPORATE SOURCE: Institut fur Pharmazie II (Pharmazeutische Biologie),  
Freie Universitat Berlin, Berlin, D-14195, Germany  
SOURCE: Phytochemistry (1999), 51(8), 1177-1180  
CODEN: PYTCAS; ISSN: 0031-9422  
PUBLISHER: Elsevier Science Ltd.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB N-Formylloline was isolated from roots of *Argyrea mollis*. This is the first identification of a 1-aminopyrrolizidine alkaloid (loline alkaloid) in a species of the Convolvulaceae. Lolines are only known from the genus *Adenocarpus* (Fabaceae) and certain grasses (e.g. *Festuca*) infected with endophytic fungi. A GC-MS anal. revealed N-formylloline to be present in roots and aerial vegetative plant parts. It is accompanied by three congeners (i.e. loline, N-methylloine and N-propionylnorloline) and simple pyrrolidine alkaloids such as hygrine and its derivs. as well as tropan-3 $\beta$ -ol. Lolines could not be detected in *Argyrea capitata*, *A. hookeri*, *A. nervosa* and numerous species of 14 other convolvulaceous genera.

OS.CITING REF COUNT: 15 THERE ARE 15 CAPLUS RECORDS THAT CITE THIS  
RECORD (15 CITINGS)  
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1997:13947 CAPLUS  
DOCUMENT NUMBER: 126:129331  
ORIGINAL REFERENCE NO.: 126:24941a,24944a  
TITLE: Levels and tissue distribution of loline alkaloids in  
endophyte-infected *Festuca pratensis*  
AUTHOR(S): Justus, Mathias; Witte, Ludger; Hartmann, Thomas  
CORPORATE SOURCE: Inst. Pharmazeutische Biol., Technischen Univ.  
Braunschweig, Braunschweig, D-38106, Germany  
SOURCE: Phytochemistry (1996), Volume Date 1997, 44(1), 51-57  
CODEN: PYTCAS; ISSN: 0031-9422  
PUBLISHER: Elsevier  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB *Festuca pratensis* (meadow fescue) infected with the endophyte *Acremonium uncinatum* produces loline alkaloids (1-aminopyrrolizidines) that are not found in the uninfected grass or the fungus alone. Five alkaloids were identified by capillary GC and GC-MS: N-formylloline as the major compound, followed by N-acetylloine, N-acetylnorloline and trace amts. of loline and N-methylloine. A routine procedure for the extraction and sensitive quant. anal. of loline alkaloids by capillary GC is described. The loline alkaloid levels and concns. were followed quant. over the growing season of the grass-endophyte association. A detailed anal. of the tissue distribution of the alkaloids is given. The total alkaloid level per plant increases from almost zero in early spring and reaches its highest level during seed maturation. It drops to almost zero with seed dispersal and stalk senescence but increases again during the subsequent period of vegetative growth in late summer. The highest alkaloid concns. were found in young leaves in early spring, and in panicles (spikelets, seeds) and leaf pseudostems during the period of vegetative growth in late summer and autumn. During seed germination loline alkaloids are not degraded, however, a significant proportion (about 20%) are lost by leaching, mainly

during seed imbibition. Within a seed the embryo was found to contain a two-fold higher alkaloid concentration than the remaining seed tissue.

OS.CITING REF COUNT: 22 THERE ARE 22 CAPLUS RECORDS THAT CITE THIS RECORD (22 CITINGS)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1996:557215 CAPLUS

TITLE: Epichloe species: fungal symbionts of grasses

AUTHOR(S): Schardl, Christopher L.

CORPORATE SOURCE: Department of Plant Pathology, University of Kentucky, Lexington, KY, 40546-0091, USA

SOURCE: Annual Review of Phytopathology (1996), 34, 109-130  
CODEN: APPYAG; ISSN: 0066-4286

PUBLISHER: Annual Reviews

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Epichloe species and their asexual descendants (Acremonium endophytes) are fungal symbionts of C3 grasses that span the symbiotic continuum from antagonism to mutualism depending on the relative importance, resp., of horizontal transmission of sexual spores vs. vertical clonal transmission in healthy grass seeds. At least seven sexual Epichloe species are identifiable by mating tests, and many asexual genotypes are interspecific hybrids. Benefits conferred by the symbionts on host plants include protection from biotic factors and abiotic stresses such as drought. Four classes of beneficial alkaloids are associated with the symbionts: ergot alkaloids, indole diterpenes (lolitrems), peramine, and saturated aminopyrrolizidines (lolines). These alkaloids protect host plants from insect and vertebrate herbivores, including livestock. Genetic engineering of the fungal symbionts as more suitable biol. protectants for forage grasses requires identification of fungal genes for alkaloid biosynthesis, and DNA-mediated transformation of the fungi.

OS.CITING REF COUNT: 48 THERE ARE 48 CAPLUS RECORDS THAT CITE THIS RECORD (48 CITINGS)

L4 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1988:52767 CAPLUS

DOCUMENT NUMBER: 108:52767

ORIGINAL REFERENCE NO.: 108:8753a,8756a

TITLE: Plants of New Caledonia. Part 109. Absouline, a new pyrrolizidine alkaloid from Hugonia oreogena and Hugonia penicillanthemum

AUTHOR(S): Ikhiri, Khalid; Ahond, A.; Poupat, C.; Potier, P.; Pusset, J.; Sevenet, T.

CORPORATE SOURCE: Fac. Sci., Univ. Niamey, Niamey, 10662, Niger

SOURCE: Journal of Natural Products (1987), 50(4), 626-30  
CODEN: JNPRDF; ISSN: 0163-3864

DOCUMENT TYPE: Journal

LANGUAGE: French

AB Absouline (I), and 3 derived 1-aminopyrrolizidine-type alkaloids, were isolated from H. oreogena and H. penicillanthemum. Traces of 5-methoxy-N,N-dimethyltryptamine were also found. Structures were determined by usual spectroscopic methods.

OS.CITING REF COUNT: 13 THERE ARE 13 CAPLUS RECORDS THAT CITE THIS RECORD (13 CITINGS)

L4 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1978:406461 CAPLUS

DOCUMENT NUMBER: 89:6461

ORIGINAL REFERENCE NO.: 89:1111a,1114a

TITLE: Genus Crotalaria: part XXXI. Preparation of  
 pharmacodynamic compounds based on  
 1-methylenepyrrolizidine  
 AUTHOR(S): Suri, K. A.; Suri, O. P.; Sawhney, R. S.; Gupta, O.  
 P.; Atal, C. K.  
 CORPORATE SOURCE: Reg. Res. Lab., Jammu-Tawi, India  
 SOURCE: Indian Journal of Chemistry, Section B: Organic  
 Chemistry Including Medicinal Chemistry (1977),  
 15B(10), 972-3  
 CODEN: IJSBDB; ISSN: 0376-4699  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The methylenepyrrolizidine I (Z = CH<sub>2</sub>) underwent ozonolysis to give I (Z =  
 O), the picrate of which underwent successive oximation, neutralization by  
 ion exchange chromatog., and the reduction to give a cis-trans mixture of I (Z  
 =  
 H<sub>2</sub>N, H) (II). Condensation of II with BzOH in the presence of  
 dicyclohexylcarbodiimide gave I (Z = BzNH, H). I (Z = HON) possessed  
 cardiotonic activity in the guinea pig at 500 µg-2 mg. The quaternary  
 ammonium salts from reaction of 4-PhC<sub>6</sub>H<sub>4</sub>COCH<sub>2</sub>Br with heliotridane and I (Z  
 = CH<sub>2</sub>) possessed spasmolytic activity comparable to that of papaverine.  
 OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD  
 (2 CITINGS)

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(FILE 'HOME' ENTERED AT 19:33:14 ON 04 AUG 2011)

FILE 'CAPLUS' ENTERED AT 19:33:19 ON 04 AUG 2011

L1 140 S LOLINE  
 L2 1 S L1 AND BACTERIA  
 L3 2 S L1 AND (ANTIINFECTIVE OR ANTIBACTERIAL)  
 L4 17 S AMINOPYRROLIZIDINE

=>